REMARKS

In the present Amendment, claims 1, 9 and 12 have been amended to exclude protease enzyme. Section 112 support for the amendment is found, for example, at page 11, lines 8-10 of the specification (this disclosure refers to embodiments in which protease can be used, which indicates that there are also invention embodiments in which protease is not used, and the claims are now directed to these embodiments). Claim 12 has been further amended to recite that a natural rubber latex is subjected to enzyme treatment to decompose glucans contained therein. Entry of the Amendment is respectfully requested.

Claims 1, 3-16 and 20 are pending

In paragraph No. 3 of the Action, Claims 1, 3-16 and 20 have been rejected under 35 U.S.C. § 102(b or e) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as allegedly being unpatentable over Kawamura et al (US 6,344,499) or Galimberti et al (US 2003/0109625).

In paragraph No. 4 of the Action, Claims 1, 3-10, 12-16 and 20 have been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Ichikawa et al (US 2004/0014876).

Applicant submits that the above two rejections should be withdrawn because Kawamura et al, or Galimberti et al, or Ichikawa et al does not disclose or render obvious the present invention.

In the Amendment filed December 27, 2007, Applicant explained:

> α-amylase and cellulase exert an enzyme action on the glucans. In contrast, a protease exerts an enzyme action on the protein, and does not exert an enzyme action on the glucans.
> Ichikawa et al teach that protease may be used in combination with enzymes such as amylase and cellulose to deproteinize natural

> rubber. However, the unexpectedly superior effects provided by the present invention cannot be attained in the combination of such enzymes. Protease exerts an enzyme action on the protein, and therefore, α-amylase and cellulase themselves are decomposed and lose an enzyme action on the glucans. Therefore, Ichikawa et al do not teach or suggest the decomposition of glucans.

Similarly, Kawamura et al discloses decomposing protein in natural rubber latex by using protease (col. 4, lines 5-6) and the protease may be combined with other enzymes such as amylase and cellulose (col. 4, lines 20-22). Kawamura et al does not teach or suggest the decomposition of glucans.

In response, the Examiner states:

> The claims do not exclude the protease. Further, many of the claims do not require the decomposition of the glucan but rather simply the incorporation of the decomposing enzyme. The art shows the incorporation of the decomposing enzyme.

As noted, claims 1, 9 and 12 have been amended to exclude protease enzyme.

Independent Claims 1 and 9 clearly recites that "glucans contained in the latex are decomposed." Independent Claim 12 has been amended to recite "wherein it is produced by subjecting a natural rubber latex to enzyme treatment with an α-glucan decomposing enzyme and/or a β-glucan decomposing enzyme to decompose glucans contained therein."

Galimberti et al disclose the use of hydrophilic polymers in elastomeric compositions. The hydrophilic polymers are destructured starch which comprises amylase and amylopectine. The hydrophilic polymers have a glass transition temperature ranging from 150 °C to 0 °C. See, paragraph [0009] of Galimberti et al.

The hydrophilic polymers or the destructured starch are mixed in the natural rubber compositions in Galimberti et al. In contrast, the decomposed materials processed by α-amylase and cellulase are removed from the natural rubber latex in the present invention.

Applicant discloses that "in the present invention, components exerting an adverse effect in non-rubber components are removed by decomposing glucans comprising prescribed sugar and fibers such as prescribed cellulose contained in non-rubber components in natural rubber latex to make it possible to improve a low hysteresis loss property and an abrasion resistance of natural rubber and a rubber composition using it and sufficiently maintain revelation of strain induced crystallization, an accelerating effect, an antioxidant effect and a vulcanization-accelerating effect." See, the last paragraph at page 7 of the specification and Examples (results shown in Table 2 at page 20 of the specification).

The Examiner further states:

> It is further unclear that the glucans are not decomposed [in the references]. This would seem dependent upon the molar ratios as well as the combination of the enzyme with the protease.

Applicant respectfully disagrees.

Since Kawamura et al and Ichikawa et al disclose that the protease may be combined with other enzymes such as amylase and cellulose, and Galimberti disclose hydrophilic polymers which are destructured starch comprising amylose and amylopectine, the amount of the enzymes would be small in comparison to that of protease or the starch.

In order to demonstrate that glucans contained in the latex are decomposed by the presently claimed enzyme treatment, Applicant submits herewith a Declaration under 37 C.F.R. § 1.132 executed by Mr. Takahiko Matsui.

In the Declaration, the serum obtained at a coagulation step was analyzed. The coagulation step is described at page 16, lines 10 to 13 of the specification. Since the glucans contained in the latex are decomposed by enzyme treatment, the serum comprises a monosaccharide of polysaccharide origin which is water soluble. Therefore, the monosaccharide which is included in each of the serum of Examples 1, 2, 3, 4, Comparative Example 1, and Reference Example 1 was measured by gas chromatography.

The results of the measurement of a peak area ratio of the monosaccharide are shown in the following Table.

Sample	a peak area ratio
Example 1	5.40
Example 2	5.25
Example 3	3.83
Example 4	3.65
Comparative Example 1	3.04
Reference Example 1	4.44

The peak area ratio of the monosaccharide of Example 1 or 2 with amylase treatment is larger than that of Reference Example 1. The peak area ratio of the monosaccharide of Example 1, 2, 3 or 4 is larger than that of Comparative Example 1. Therefore, it is clear that glucans contained in the latex are decomposed by amylase or cellulase.

When the glucans contained in the latex are decomposed with α-amylase, the rubber is excellent in low hysteresis loss property without reducing abrasion resistance and is low in compound Mooney viscosity. Therefore, the rubber is excellent in processability (as shown in Examples 1 and 2, lines 1-7 at page 20 of the specification).

When the glucans contained in the latex are decomposed with cellulase, the rubber is excellent in abrasion resistance without reducing low hysteresis loss property. Further, the rubber is low as well in compound Mooney viscosity and is excellent in processability (as shown in Examples 3 and 4, lines 7-11 at page 20 of the specification).

In Comparative Example 1 at page 17 of the specification, no enzyme treatment (namely, no decomposition of glucans) of the latex is conducted. Since the references do not teach or suggest the decomposition of glucans, Comparative Example 1 is representative of the references. Therefore, the Examples and Comparative Example demonstrate unexpectedly superior results provided by the present invention.

In view of the above, reconsideration and withdrawal of the rejections based on Kawamura et al or Galimberti et al or Ichikawa et al are respectfully requested.

Allowance is respectfully requested. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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